The method was applied to a high-cost innovation in oncology currently under development in five European countries, carbon ion radiotherapy. **RESULTS:** 138 potential factors identified, 116 final factors were analysed and regrouped into 9 areas. The Principal Components Analysis between countries 1 and 2, and between 4 and 5, showed proximity between the costs of equipment and the cost of buildings. A large variation was observed using the Euclidean metric between countries 1 and 2, especially for working time, and between countries 4 et 5 for the use of personnel resources. On the opposite, a low distance was observed between countries 2 and 4 for treatment capacity, and between countries 2 and 3 for technology availability and costs of personnel. **CONCLUSION:** Using this method we could assess the generalisability of the cost of carbon ion radiotherapy, and we identified factors and areas that limited this generalisability. This study also showed the necessity to integrate recommendations in order to increase the generalisability of economic evaluations in health care.

MC2

BAYESIAN MODELING OF RESOURCE USE ALONGSIDE MULTINATIONAL RANDOMISED CLINICAL TRIALS

Gauthier A[1], Manca A[2], Anton SF[3], Dewberry H[4]
[1]i3 Innovus, Uxbridge, Middlesex, UK, [2]University of York, York, UK, [3]Boehringer-Ingelheim, Ridgefield, CT, USA, [4]Boehringer Ingelheim Limited, Bracknell, Berkshire, UK

OBJECTIVES: Most cost-effectiveness analyses conducted alongside multinational randomized controlled clinical trials (RCTs) are carried out applying the unit costs from the country of interest to each resource item with the objective of estimating total health care by treatment group. An alternative is to model health care resource use (HCRU) directly rather than expressed in monetary units. This study aimed to model HCRU collected alongside RCTs, accounting for their specific distributions and the hierarchical structure of the data. **METHODS:** The analysis was conducted using data from multinational RCTs enrolling approximately 2000 patients suffering from a chronic disease. For each HCRU, appropriate distribution functions were identified based on the deviance of the univariate model (including treatment effect only). Standard models were extended to the Bayesian multi-level models (MLM) settings, whereby covariates at different levels (patient, centre and country) were introduced as predictors. **RESULTS:** Depending on the treatment group, 69% to 71% of patients had no GP visits. The Poisson distribution under-estimated the proportion of zeros by 18%, whereas the negative binomial (NB) and zero-inflated Poisson (ZIP) provided good matches. The greater flexibility of ZIP models provided significantly better fit than NB. ZIP was the best distribution to model health care resource contacts and the zero inflated Poisson overdispersed (ZIPO) function was best representing concomitant medications treatment days. GP visits presented the highest heterogeneity between countries (9% of the variance was explained by the country effect) and this was well captured by the MLMs. **CONCLUSION:** Misspecification of statistical models may result in biased parameters and misleading inference. This study proposed the development of ZIP and ZIPO MLMs to model HCRU alongside RCTs. To obtain more precise estimates, multivariate analyses of HCRU could be conducted and other sources of evidence could be used additionally, external to the clinical studies.

MC3

THE DEVELOPMENT OF AN INCREMENTAL WILLINGNESS TO PAY CURVE DERIVED FROM A DISCRETE CHOICE EXPERIMENT

Regier DA[1], Marra CA[2], Ryan M[1]
[1]University of Aberdeen, Aberdeen, Scotland, UK, [2]University of British Columbia, Vancouver, BC, Canada

OBJECTIVES: The purpose of this study was to investigate the development of an incremental willingness to pay curve (IWTPC) using parameters obtained from a discrete choice experiment (DCE). **METHODS:** The DCE was structured around a novel genetic technology that identifies genetic causes of developmental delay (DD). The DCE included three alternatives. The first two alternatives differed on three attributes: number of children receiving a genetic diagnosis, time waiting for results, and cost. The third alternative was an opt-out option to allow for non-demanders. A mixed logit (MXL) behavioural model was specified to incorporate preference heterogeneity, and hierarchical Bayes (HB) was employed to estimate the joint posterior of parameter partworths. The opt-out parameter was assumed to follow a normal distribution, a truncated normal was given to number of children diagnosed and waiting time, and the log normal distribution was assumed for cost. The HB procedures employed allow for the direct estimation of each individual's parameter estimates, which are transformed into an incremental willingness to pay (WTP) value. Under certain assumptions, the IWTPC represents the incremental WTP that each individual in society has for the technology under a given scenario. **RESULTS:** A total of 796 respondents from the general public were recruited using a research firm in British Columbia, Canada. Each respondent completed 16 choice questions. The parameter estimates revealed a considerable amount of preference heterogeneity, which indicated that the mean incremental WTP estimate might not accurately represent society's WTP. Individual WTP ranged from $28 to $12,000 for an increase in 14 children identified to have a genetic cause of DD and a 1-week reduction in waiting time. Fifty-one percent of respondents had an incremental WTP of at least $1041 for the scenario. **CONCLUSION:** Using the joint posterior of preference partworths, the IWTPC is a promising tool to characterize the value of a health care good.

MC4

COMPARISON OF THREE INSTRUMENTS ASSESSING THE QUALITY OF ECONOMIC EVALUATIONS

Gerkens S, Crott R, Beguin C, Closon MC, Horsmans Y
Université Catholique de Louvain, Brussels, Belgium

OBJECTIVES: The increasing use of full economic evaluations has lead to the development of various instruments to assess their quality. In addition to the much used British Medical Journal (BMJ) check-list, two new instruments were recently developed: the Consensus Health Economic Criteria (CHEC) list and the Quality of Health Economic Studies (QHES) instrument. The purpose of this study was to compare these three instruments as quantitative tools to measure the quality of economic evaluations. The analysis was performed through a systematic review of economic evaluations of the surgical treatment of obesity. **METHODS:** Quality of 9 selected studies was assessed independently by two health economist experts. Rater 1 repeated the analysis after 8 weeks. The spearman rank correlation coefficient was used at time 1 and 2 to compare the instruments, and for each instrument, the intraclass correlation coefficient (ICC(3,1)) to assess test-retest reliability between time 1 and 2. For each instrument, the interrater agreement was estimated at two levels: comparison of the total score of each article by the ICC(2,1) and comparison of results per item by kappa values. **RESULTS:**